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| 10/027,886 | 10/19/2001 | John V. Reynders | P6270 | 3221 |

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| EXAMINER | |
|---|---|
| NANO, SARGON N | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2157 | |

DATE MAILED: 02/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/027,886 | REYNDERS ET AL. | |
| | Examiner | Art Unit | |
| | Sargon N Nano | 2157 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *19 October 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

**1.** This action is responsive to application filed on Oct. 19, 2001. Claims 1 – 22 are pending examination.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 – 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Alfonssi et al U.S patent No. 5,5491,690 (referred to hereafter as Alfonsi).
Alfonsi teaches routing algorithms compute all the available paths in a network, from a source node to a destination node (see abstract).

**2.** As to claim 1, Alfonsi teaches a method for adding routing information for a node to a routing table, wherein said routing table includes routing information reflecting an existing deadlock-free set of paths through a network of nodes, comprising:

adding a row of entries to said routing table, wherein said row includes a plurality of entries, each of said entries including forwarding information that describes how said node is to forward a data unit addressed to a corresponding destination node within said network of nodes, and wherein said forwarding information in said row of entries

describes at least a portion of a first set of paths, and wherein a combination of said first set of paths together with said existing set of paths is deadlock-free(see col.3, line 57 - col.4 line 6 and fig.8, Alfonsi discloses a table with multiple rows in a network where routing tables are updated); and

adding a column of entries to said routing table, wherein said column includes a plurality of entries, each of said entries including forwarding information that describes how a corresponding forwarding node within said network of nodes is to forward a data unit addressed to said node as a destination node, and wherein said forwarding information in said column of entries describes at least a portion of a second set of paths, and wherein a combination of said first set of paths, said second set of paths, and said existing paths is deadlock-free(see col.3, line 57 - col.4 line 6 and fig.8, Alfonsi discloses a table with a number of columns equal to the number of output links where routing tables are updated ).

As to claim 2, Alfonsi teaches the method of claim 1, further comprising: forming an ordered set of deadlock-free sub-topologies of said network, each sub-topology comprising links that are not used in any other sub-topology (see col.9 line 63- col. 10 line 2 and fig.3, Alfonsi discloses high speed transmission links);

generating said routing table in response to said ordered set of deadlock-free sub-topologies (see col.2, line 57 - col.3 line 7 and fig.8, Alfonsi discloses building a routing table).

As to claim 3, Alfonsi teaches the method of claim 2, wherein said forming said ordered set of deadlock-free sub-topologies of said network further comprises forming

at least one sub-topology of said network that is a spanning layer of said network (see col. 4 lines 18 – 29).

As to claim 4, Alfonsi teaches the method of claim 3, further comprising maintaining a cost of a corresponding link between each of said nodes in said network within each entry of said routing table (see col. 10 lines 11 – 36).

As to claim 5, the method of claim 4, wherein said adding said column to said routing table further comprises: for each entry within said column, performing the following steps:

determining a set of cost values, wherein each value within said set of cost values reflects a sum of the cost of reaching a selected neighbor node of said node from said corresponding forwarding node and the cost of reaching said node from said selected neighbor node (see col. 10 lines 11- 19),

determining a minimum value of said set of cost values (see col. 10 lines 11-15), and

determining forwarding information for said entry indicating said selected neighbor node associated with said minimum value (see col. 10 lines 11 – 36).

As to claim 6, Alfonsi teaches the method of claim 4, wherein said adding said row to said routing table further comprises:

for each entry within said row, performing the following steps

determining a set of cost values, wherein each value within said set of cost values reflects a sum of the cost of reaching said corresponding destination node from a

selected neighbor node of said node and the cost of reaching said selected neighbor node from said node( see col. 15 lines 25 – 35 and fig. 6),

determining a minimum value of said set of cost values, and a determining forwarding information for said entry indicating said selected neighbor node associated with said minimum value ( see col. 15 lines 25 – 35 and fig. 6).

As to claim 7, Alfonsi teaches a system for adding routing information for a node to a routing table, wherein said routing table includes routing information reflecting an existing deadlock-free set of paths through a network of nodes, comprising routing logic operable to:

add a row of entries to said routing table, wherein said row includes a plurality of entries, each of said entries including forwarding information that describes how said node is to forward a data unit addressed to a corresponding destination node within said network of nodes, and wherein said forwarding information in said row of entries describes at least a portion of a first set of paths, and wherein a combination of said first set of paths together with said existing set of paths is deadlock-free (see col.3, line 57 - col.4 line 6 and fig.8, Alfonsi discloses a table with multiple rows in a network where routing tables are updated); and

add a column of entries to said routing table, wherein said column includes a plurality of entries, each of said entries including forwarding information that describes how a corresponding forwarding node within said network of nodes is to forward a data unit addressed to said node as a destination node, and wherein said forwarding information in said column of entries describes at least a portion of a second set of

paths, and wherein a combination of said first set of paths, said second set of paths, and said existing paths is deadlock-free (see col.3, line 57 - col.4 line 6 and fig.8, Alfonsi discloses a table with a number of columns equal to the number of output links where routing tables are updated ).

As to claim 8, Alfonsi teaches the system of claim 7, wherein said routing logic is further operable to:

form an ordered set of deadlock-free sub-topologies of said network, each sub-topology comprising links that are not used in any other sub-topology(see col.9 line 63-col. 10 line 2 and fig.3, Alfonsi discloses high speed transmission links); and

generate said routing table in response to said ordered set of deadlock-free sub-topologies( see col.2, line 57 - col.3 line 7 and fig.8, Alfonsi discloses building a routing table).

As to claim 9, Alfonsi teaches the system of claim 8, wherein said routing logic is further operable to form said ordered set of deadlock-free sub-topologies of said network further by forming at least one sub-topology of said network that is a spanning layer of said network (see col. 4 lines 18 – 29).

As to claim 10, Alfonsi teaches the system of claim 9, wherein said routing logic is further operable to maintain a cost of a corresponding link between each of said nodes in said network within each entry of said routing table (see col. 10 lines 11 – 36).

As to claim 11, Alfonsi teaches the system of claim 10, wherein routing logic operable to add said column to said routing table is further operable to perform the following steps for each entry within said column:

determine a set of cost values, wherein each value within said set of cost values reflects a sum of the cost of reaching a selected neighbor node of said node from said corresponding forwarding node and the cost of reaching said node from said selected neighbor node(see col. 10 lines 11- 19);

determine a minimum value of said set of cost values (see col. 10 lines 11- 15),; and

determine forwarding information for said entry indicating said selected neighbor node associated with said minimum value (see col. 10 lines 11 – 36).

As to claim 12, Alfonsi teaches the system of claim 10, wherein said routing logic operable to add said row to said routing table is further operable to perform the following steps for each entry within said row:

determine a set of cost values, wherein each value within said set of cost values reflects a sum of the cost of reaching a corresponding node from a selected neighbor node of said node and the cost of reaching said selected neighbor node from said node( see col. 15 lines 25 – 35 and fig. 6);

determine a minimum value of said set of cost values; and determine forwarding information for said entry indicating said selected neighbor node associated with said minimum value( see col. 15 lines 25 – 35 and fig. 6).

As to claim13, Alfonsi teaches the system of claim 7, wherein said routing logic comprises at least one digital logic circuit (see col.9, lines 43 – 52).

As to claim 14, Alfonsi teaches the system of claim 7, wherein said routing logic comprises program code loaded into a memory of a computer system (see col.3, line 57 - col.4 line 6 and fig.8).

As to claim 15, Alfonsi teaches a system for adding routing information for a node to a routing table, wherein said routing table includes routing information reflecting an existing deadlock-free set of paths through a network of nodes, comprising routing logic operable to:

means for adding a row of entries to said routing table, wherein said row includes a plurality of entries, each of said entries including forwarding information that describes how said node is to forward a data unit addressed to a corresponding destination node within said network of nodes, and wherein said forwarding information in said row of entries describes at least a portion of a first set of paths, and wherein a combination of said first set of paths together with said existing set of paths is deadlock-free(see col.3, line 57 - col.4 line 6 and fig.8, Alfonsi discloses a table with multiple rows in a network where routing tables are updated); and

means for adding a column of entries to said routing table, wherein said column includes a plurality of entries, each of said entries including forwarding information that describes how a corresponding node within said network of nodes is to forward a data unit addressed to said node as a destination node, and wherein said forwarding information in said column of entries describes at least a portion of a second set of paths, and wherein a combination of said first set of paths, said second set of paths, and said existing paths is deadlock-free (see col.3, line 57 - col.4 line 6 and fig.8,

Alfonsi discloses a table with a number of columns equal to the number of output links where routing tables are updated).

As to claim 16, Alfonsi teaches a computer program product including a computer readable medium, said computer readable medium having a computer program stored thereon, said computer program for adding routing information for a node to a routing table, wherein said routing table includes routing information reflecting an existing deadlock-free set of paths through a network of nodes, said computer program comprising:

program code for adding a row of entries to said routing table, wherein said row includes a plurality of entries, each of said entries including forwarding information that describes how said node is to forward a data unit addressed to a corresponding destination node within said network of nodes, and wherein said forwarding information in said row of entries describes at least a portion of a first set of paths, and wherein a combination of said first set of paths together with said existing set of paths is deadlock-free (see col.3, line 57 - col.4 line 6 and fig.8, Alfonsi discloses a table with multiple rows in a network where routing tables are updated); and

program code for adding a column of entries to said routing table, wherein said column includes a plurality of entries, each of said entries including forwarding information that describes how a corresponding node within said network of nodes is to forward a data unit addressed to said node as a destination node, and wherein said forwarding information in said column of entries describes at least a portion of a second set of paths, and wherein a combination of said first set of paths, said second set of

paths, and said existing paths is deadlock-free (see col.3, line 57 - col.4 line 6 and fig.8, Alfonsi discloses a table with a number of columns equal to the number of output links where routing tables are updated).

As to claim 17, Alfonsi teaches a computer data signal embodied in a carrier wave, said computer data signal including a computer program stored, said computer program for adding routing information for a node to a routing table, wherein said routing table includes routing information reflecting an existing deadlock-free set of paths through a network of nodes, said computer program comprising:

program code for adding a row of entries to said routing table, wherein said row includes a plurality of entries, each of said entries including forwarding information that describes how said node is to forward a data unit addressed to a corresponding destination node within said network of nodes, and wherein said forwarding information in said row of entries describes at least a portion of a first set of paths, and wherein a combination of said first set of paths together with said existing set of paths is deadlock-free (see col.3, line 57 - col.4 line 6 and fig.8, Alfonsi discloses a table with multiple rows in a network where routing tables are updated); and

program code for adding a column of entries to said routing table, wherein said column includes a plurality of entries, each of said entries including forwarding information that describes how a corresponding forwarding node within said network of nodes is to forward a data unit addressed to said node as a destination node, and wherein said forwarding information in said column of entries describes at least a portion of a second set of paths, and wherein a combination of said first set of paths,

said second set of paths, and said existing paths is deadlock-free (see col.3, line 57 - col.4 line 6 and fig.8, Alfonsi discloses a table with a number of columns equal to the number of output links where routing tables are updated).

As to claim 18, Alfonsi teaches a method for inserting routing information regarding a node into a routing table, wherein said routing table defines a deadlock-free set of paths through a network of nodes, comprising:

obtaining identification of at least one link operable to deliver data to said node ( see col. 10 lines 11 – 23);

obtaining identification of at least one link operable to convey data transmitted from said node ( see col. 10 lines 11 – 23) ;

storing said identification of said at least one link operable to deliver data to said node into a new highest layer within an ordered set of layers upon from which said deadlock-free set of paths are derived (see col. 13, lines 44 – 47);

storing said identification of said at least one link operable to convey day transmitted from said node into a new lowest layer within said ordered set of layers upon which said deadlock-free set of paths are derived (see col. 13, lines 44 – 47); and

adding routing information to said forwarding table that reflects said new lowest layer and said new highest layer ( see col.3, lines 57 – col. 4 , line 6 ).

As to claim 19, Alfonsi teaches a method for inserting routing information regarding a unidirectional link into a routing table, wherein said routing table defines a deadlock-free set of paths through a network of nodes, comprising:

adding said unidirectional link into a new layer within an ordered set of layers upon from which said deadlock-free set of paths are derived (see col. 8 lines 35 – 37 and fig. 5); and

recalculating said deadlock-free set of paths in response to said adding of said unidirectional link into said new layer (see col. 9, lines 26 – 60).

As to claim 20, Alfonsi teaches a method for inserting routing information regarding a bi-directional link into a routing table, wherein said routing table defines a deadlock-free set of paths through a network of nodes, wherein said bi-directional link is between a first node and a second node, comprising:

determining a first unidirectional link from said first node to said second node (see col. 2 line 56 col. 3 line 7);

determining a second unidirectional link from said second node to said first node(see col. 2 line 56 col. 3 line 7);

adding said first unidirectional link to a lowest layer within an ordered set, of layers upon from which said deadlock-free set of paths are derived( see col. 4 lines 18 – 29 );

adding said second unidirectional link to a highest layer within said ordered set of layers upon from which said deadlock-free set of paths are derived; and recalculating said deadlock-free set of paths ( see col. 4 lines 18 – 29 ).

As to claim 21, Alfonsi teaches the method of claim 1, further comprising iteratively performing said steps of adding a row of entries and adding a column of

entries in order to add routing information to said routing table for a plurality of nodes (see col.13, lines 11- 37).

As to claim 22, Alfonsi teaches the method of claim 21, wherein said existing deadlock-free set of paths are through a network of two nodes (see col. 2 line 57- 67 and fig.6).

***Conclusion***

**3.** The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Method For Adaptive Routing In A Communication Network by Thanner et al. U.S.patent No. 5,732,072
- High Availability computer System And Method For Switching Servers Having An Imaginary Address by Watanabe U.S. Patent No. 6,647,427.
- Sysytem And Method for Secure Provisioning of A Mobile Station From A provisioning server Using IWF-Based Firewall by Moles et al. U.S .Patent NO. 6,466,779.
- Integrated Networks by Fukurawa et al. U.S. Patent No. 6,711,623.
- Routers Uses A Single Hierarchy Independent Routing Table That Includes A Flag To Look – Up a Series of Next Hop Routers For Routing Packets, by Basso et al. U.S. Patent No. 6,658,481.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sargon N Nano whose telephone number is (571) 272-4007. The examiner can normally be reached on 8 hour.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ario Etienne can be reached on (571) 272-4001. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sargon Nano
Art Unit 2157
Jan. 26, 2005.

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